

LT 4: I can use the unit circle to find the exact value of a trig ratio

Find the EXACT trig value. Simplify and rationalize any radicals. NO DECIMALS!!!

1. $\sin \frac{3\pi}{4}$

$$\boxed{\frac{\sqrt{2}}{2}}$$

2. $\cos 360^\circ$

$$\boxed{1}$$

3. $\tan \frac{\pi}{6}$

$$\frac{1}{\sqrt{3}} = \boxed{\frac{\sqrt{3}}{3}}$$

4. $\cot 120^\circ$

$$\frac{-1}{\sqrt{3}} = \boxed{\frac{-\sqrt{3}}{3}}$$

5. $\csc \frac{5\pi}{6}$

$$\boxed{2}$$

6. $\sec 240^\circ$

$$\boxed{-2}$$

7. $\sin 0$

$$\boxed{0}$$

8. $\cos 225^\circ$

$$\boxed{\frac{-\sqrt{2}}{2}}$$

9. $\tan \frac{5\pi}{3}$

$$\frac{-\sqrt{3}}{1} = \boxed{-\sqrt{3}}$$

10. $\cos 240^\circ$

$$\boxed{-\frac{1}{2}}$$

11. $\csc \frac{7\pi}{6}$

$$\frac{-2}{1} = \boxed{-2}$$

12. $\sec 135^\circ$

$$\frac{-2}{\sqrt{2}} = \boxed{-\sqrt{2}}$$

13. $\sin \frac{\pi}{6}$

$$\boxed{\frac{1}{2}}$$

14. $\tan 0$

$$\frac{0}{1} = \boxed{0}$$

15. $\cos \frac{\pi}{4}$

$$\boxed{\frac{\sqrt{2}}{2}}$$

16. $\tan 315^\circ$

$$\frac{-\sqrt{2}}{\sqrt{2}} = \boxed{-1}$$

17. $\cot \pi$

$$\frac{-1}{0} = \boxed{\text{Undefined}}$$

18. $\csc 150^\circ$

$$\frac{2}{1} = \boxed{2}$$

Use the trigonometric function values to evaluate each expression.

19.) $\sin^2 \frac{\pi}{3} + 4 \cos^2 \frac{\pi}{2}$

$\sin \frac{\pi}{3} = \frac{\sqrt{3}}{2}$
 $\cos \frac{\pi}{2} = 0$
 $\left(\frac{\sqrt{3}}{2}\right)^2 + 4(0)^2$
 $\frac{3}{4} + 0$
 $\boxed{\frac{3}{4}}$

20.) $2 \csc 90^\circ + 6 \cos 120^\circ$

$\csc 90^\circ = 1$
 $\cos 120^\circ = -\frac{1}{2}$
 $2(1) + 6(-\frac{1}{2})$
 $2 - 3$
 $\boxed{-1}$

21.) $2 \sin \pi - 4 \tan \frac{\pi}{4}$

$\sin \pi = 0$
 $\tan \frac{\pi}{4} = \frac{\sqrt{2}}{\sqrt{2}} = 1$
 $2(0) - 4(1)$
 $0 - 4$
 $\boxed{-4}$

22.) $\cot^2 300^\circ - 4 \sec^2 240^\circ$

$\cot 300^\circ = \frac{-1}{\sqrt{3}} = -\frac{\sqrt{3}}{3}$
 $\sec 240^\circ = -\frac{2}{1}$
 $\left(-\frac{\sqrt{3}}{3}\right)^2 - 4(-2)^2$
 $\frac{3}{9} - 4(4)$
 $\frac{1}{3} - 16$
 $\boxed{-\frac{47}{3}}$

Identify the quadrant or quadrants for the angle θ satisfying the given conditions.

23.) $\sin \theta > 0, \cot \theta < 0$

$\begin{array}{c|c} + & + \\ \hline - & - \end{array}$
 Q2
 or
 $\boxed{\text{QII}}$

24.) $\sec \theta < 0, \tan \theta < 0$

$\begin{array}{c|c} = & = \\ \hline - & - \end{array}$
 Q2
 $\boxed{\text{QII}}$

25.) $\csc \theta < 0$

$\begin{array}{c|c} - & - \\ \hline - & - \end{array}$
 Q3 and Q4
 $\boxed{\text{QIII and QIV}}$

26.) $\cos \theta < 0, \sin \theta < 0$

$\begin{array}{c|c} - & - \\ \hline - & - \end{array}$
 Q3
 $\boxed{\text{QIII}}$